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BELLCOMM, INC.
955 L'ENFANT PLAZA NORTH, S.W. WASHINGTON, D. C. 20024

SUBJECT: Trip Report: Meetings of the AAP Guidance, Performance and Dynamics Subpanel and Flight Limits and Range Safety Subpanel - Case 610

DATE: February 3, 1969

FROM: K. E. Martersteck

ABSTRACT

The eighth meeting of the AAP Guidance, Performance and Dynamics (GP&D) Subpanel was held at MSFC on January 15, 1969 followed the next day by the third meeting of the Flight Limits and Range Safety (FLARS) Subpanel. Following a general discussion of rendezvous launch window and phasing considerations, the GP&D worked out a list of trajectories needed to support the range safety package for the Air Force Eastern Test Range and a schedule for their generation.

At its meeting the FLARS reviewed the GP&D trajectory schedule and added additional milestones which must be accomplished by FLARS to complete the range safety packages.

(NASA-CR-103922) TRIP REPORT - MEETINGS OF THE APP GUIDANCE, PERFORMANCE AND DYNAMICS SUBPANEL AND FLIGHT LIMITS AND RANGE SAFETY SUBPANEL (Bellcomm, Inc.) 12 p

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MEMORANDUM FOR FILE

The eighth meeting of the AAP Guidance, Performance and Dynamics (GP&D) Subpanel was held at MSFC on January 15, 1969. On the following day the Flight Limits and Range Safety (FLARS) Subpanel met. Since there was considerable overlap in the agenda of the two meetings and many FLARS members attended the GP&D session, both meetings will be covered in one trip report.

During the review of GP&D action items, a general discussion of rendezvous launch window and phasing considerations developed. MSFC wants to cling to the $\pm 2°$ tolerance in the 35° inclination in order to allow flexibility for mission optimization. In fact they have begun design trajectory development using an inclination of 35.93°, which would allow AAP-1 to be launched on Day 2 in phase with the OWS for an M=3 rendezvous with no yaw steering. MSC contends that little useful optimization results from small adjustments about the nominal value of 35° inclination. The CSM should be launched essentially in plane and satisfy the phasing requirements by appropriate on-orbit maneuvers.

Regardless of which launch window philosophy is pursued, there will be an impact on the KSC operations. The AAP-4 LM/ATM must be launched "on-time." Although a precise definition of "on-time" could not be agreed upon, it was agreed that this means launch within a very few seconds (not minutes) of some specified time. KSC is undertaking various failure-mode-and-effects analyses to assess the impact of this requirement on operations and equipment, both airborne and GSE. The results of these analyses will not be available for a few months. KSC was asked to evaluate the possibility of using two launch opportunities on the same day but separated by about five hours. In response to another question, the KSC representative said he thinks the launch azimuth could be changed anytime before the automatic sequence is initiated at L-153 seconds.

The principal item on the GP&D agenda was a discussion of action required to support the FLARS Subpanel in preparation of the report to Air Force Eastern Test Range (AFETR) requesting range safety clearance for the AAP flights. It was felt that AFETR input requirements could be satisfied by providing for each

mission class a trajectory tape for launches along the maximum and minimum azimuth and an intermediate azimuth with a detailed dispersion analysis of the latter. The following design trajectories will be developed for range safety analyses:

AAP-1
(Characterizing All CSM Launches)

Launch Azimuth	Remarks
∿105°	Earliest launch, determined by AAP-1 opportunity on Day 2 if no passivation Δv is realized on AAP-2
110°	Nominal plus detailed dispersions
114°	Assumes 37° inclination used
∿ 67°	In case northerly launches are approved for the CSM's (Carl Huss, MSC/MPAD, does not think northerly launches should be precluded)

AAP-4
(Characterizing Unmanned Launches)

Launch Azimuth	Remarks
58°	Most northerly azimuth of the northern opportunity if 1000 lb yaw-steering allowance is provided
65°	Nominal plus detailed dispersions
75°	Most southerly azimuth of northern opportunity if 1000 lb yaw-steering allowance is provided
103°	Most northerly azimuth of southern opportunity if 1000 lb yaw-steering allowance is provided
∿110°	Nominal plus detailed dispersions
114°	Most southerly azimuth to be considered

Chrysler Corporation will produce these design trajectories. Then MSFC will put them into the required format in Range Safety Reports as prescribed by AFETR. MSC will provide inputs on LES and SLA panel impact dispersions but the Chrysler trajectories

will include the SPS insertion of the manned launches. A schedule for the production of these reports was agreed upon and submitted to the FLARS Subpanel.

At its meeting the FLARS Subpanel reviewed the GP&D schedule and fitted around it additional pertinent milestones as shown in the attached chart. It should be noted that subsequent to the meeting it was decided to delete the AAP-2 Range Safety Report since the AAP-4 report would provide sufficient data.

K. E. Martersteck

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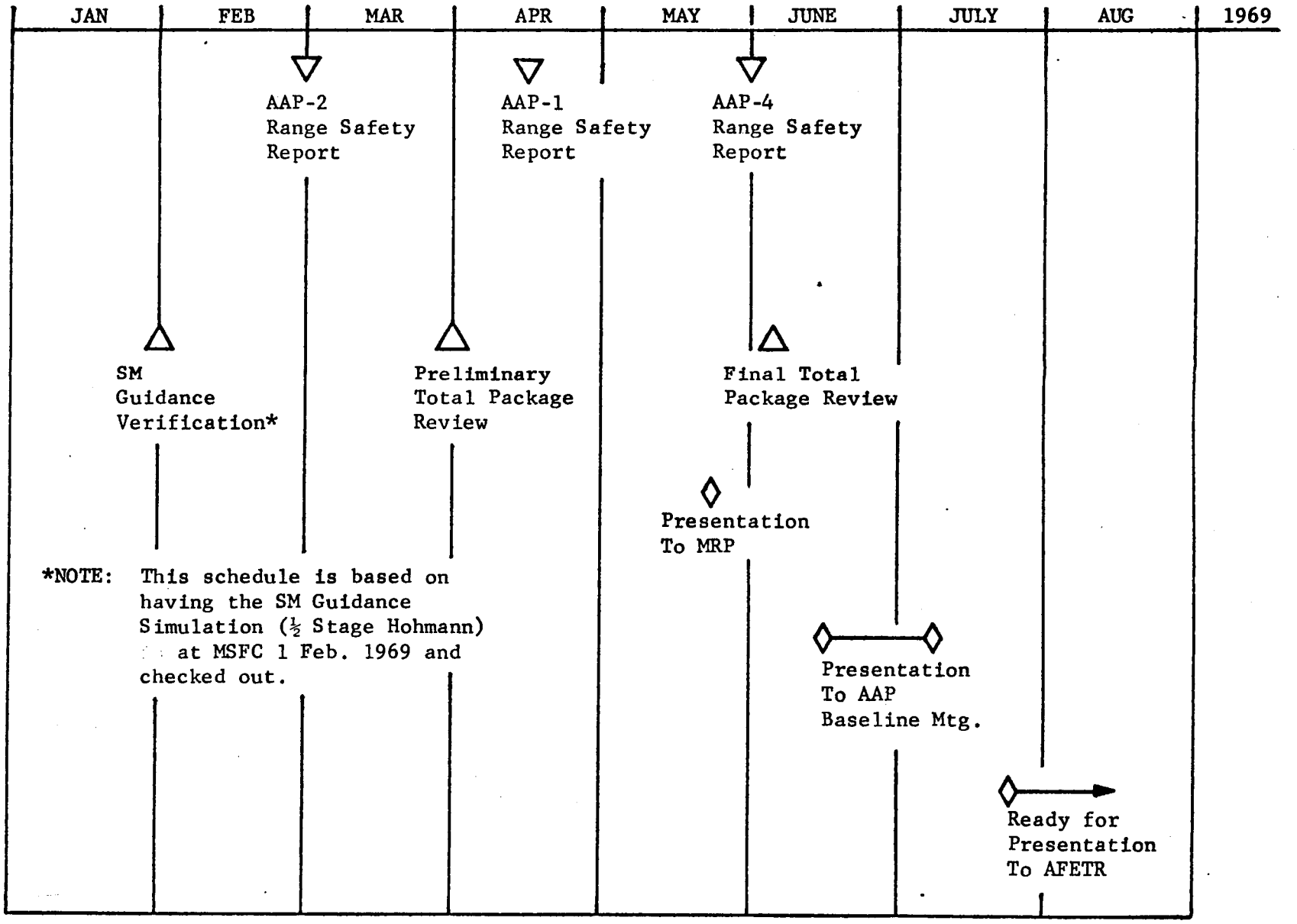
Attachment

DEVELOPMENT OF THE AAP RANGE SAFETY PRESENTION TO AFETR



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